Fig. 3

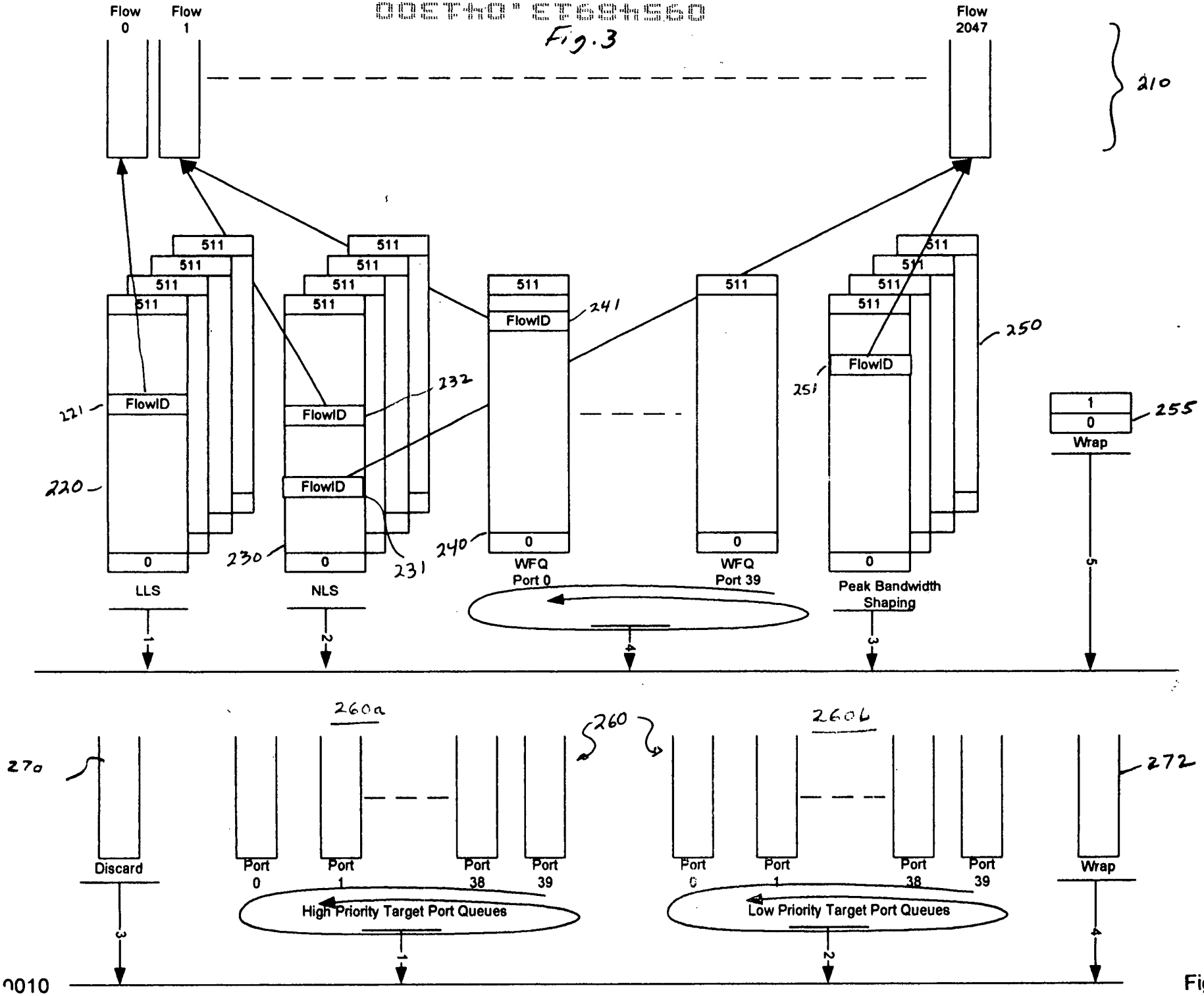

Figure-3

0087A0 E1684560

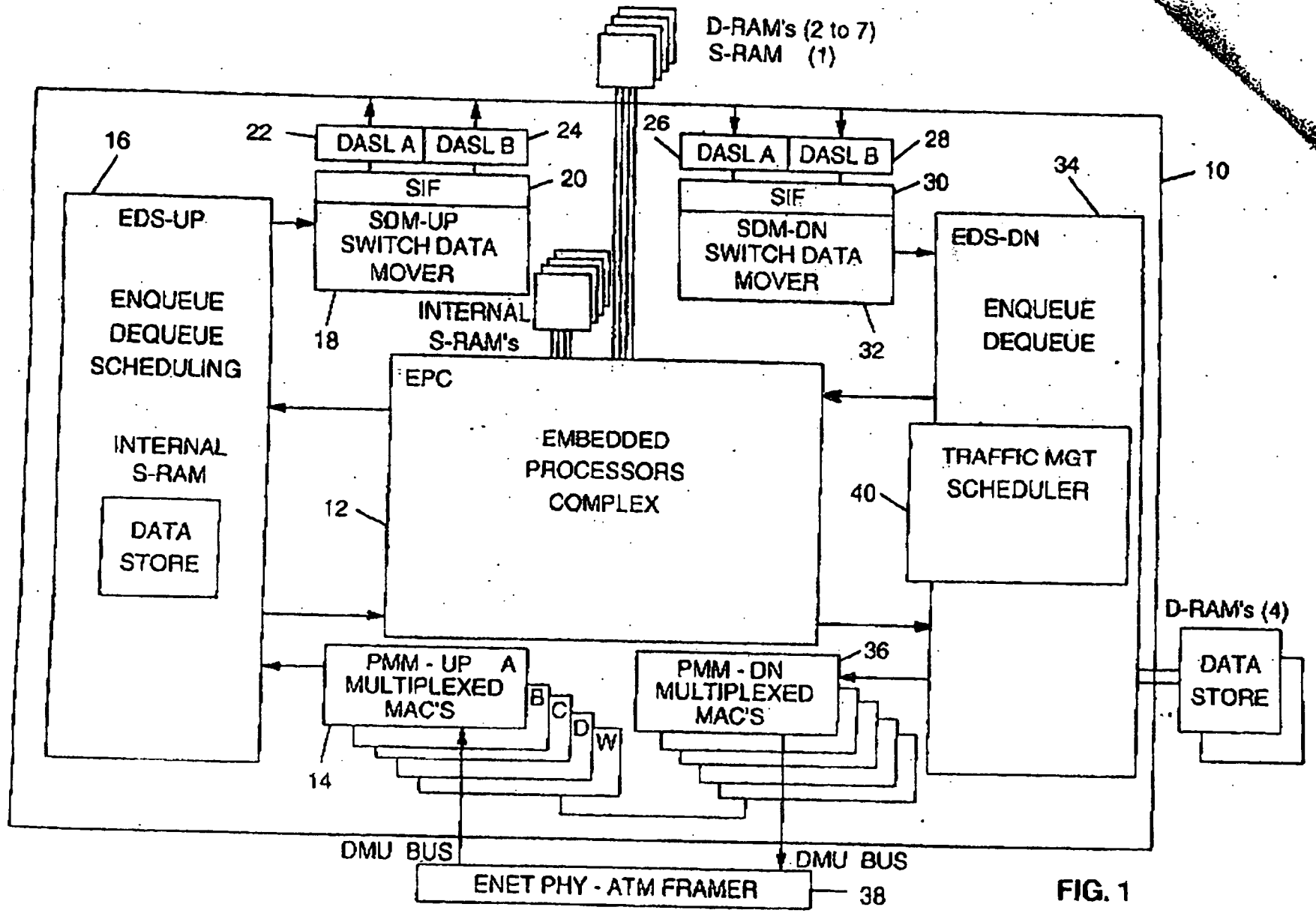

FIG. 1

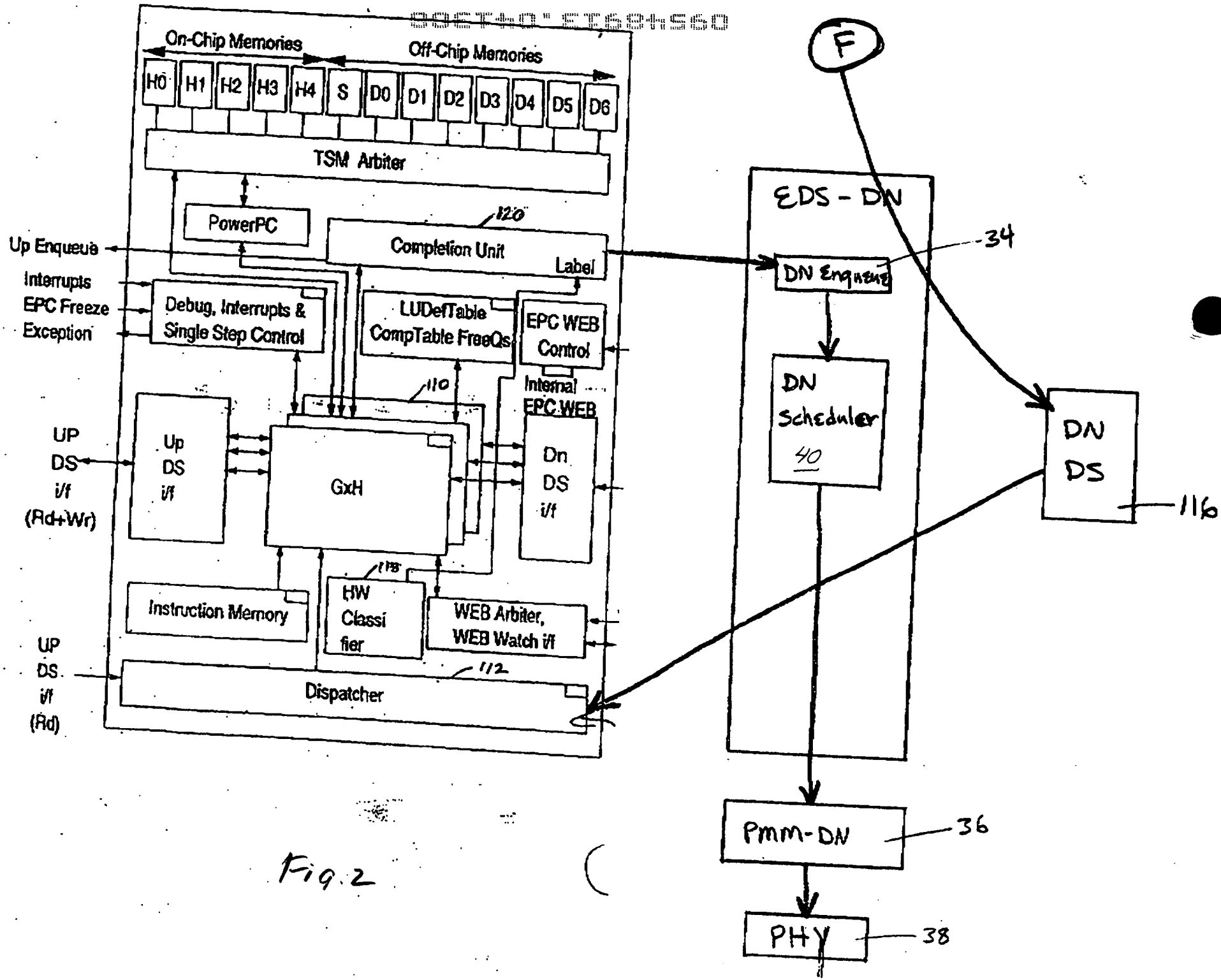
On-Chip Memories
Off-Chip Memories
H0
H1
H2
H3
H4
S
D0
D1
D2
D3
D4
D5
D6
TSM Arbiter
PowerPC
120
Completion Unit
Label
Up Enqueue
Interrupts
EPC Freeze
Exception
Debug, Interrupts & Single Step Control
LUDefTable
CompTable FreeQs
EPC WEB Control
Internal EPC WEB
110
UP DS i/f (Rd+Wr)
Up DS i/f
GxH
Dn DS i/f
118
Instruction Memory
HW Classifier
WEB Arbiter, WEB Watch i/f
UP DS i/f (Rd)
Dispatcher
112
F
EDS - DN
DN Enqueue
34
DN Scheduler
40
DN DS
116
Pmm-DN
36
PHY
38

Fig. 2

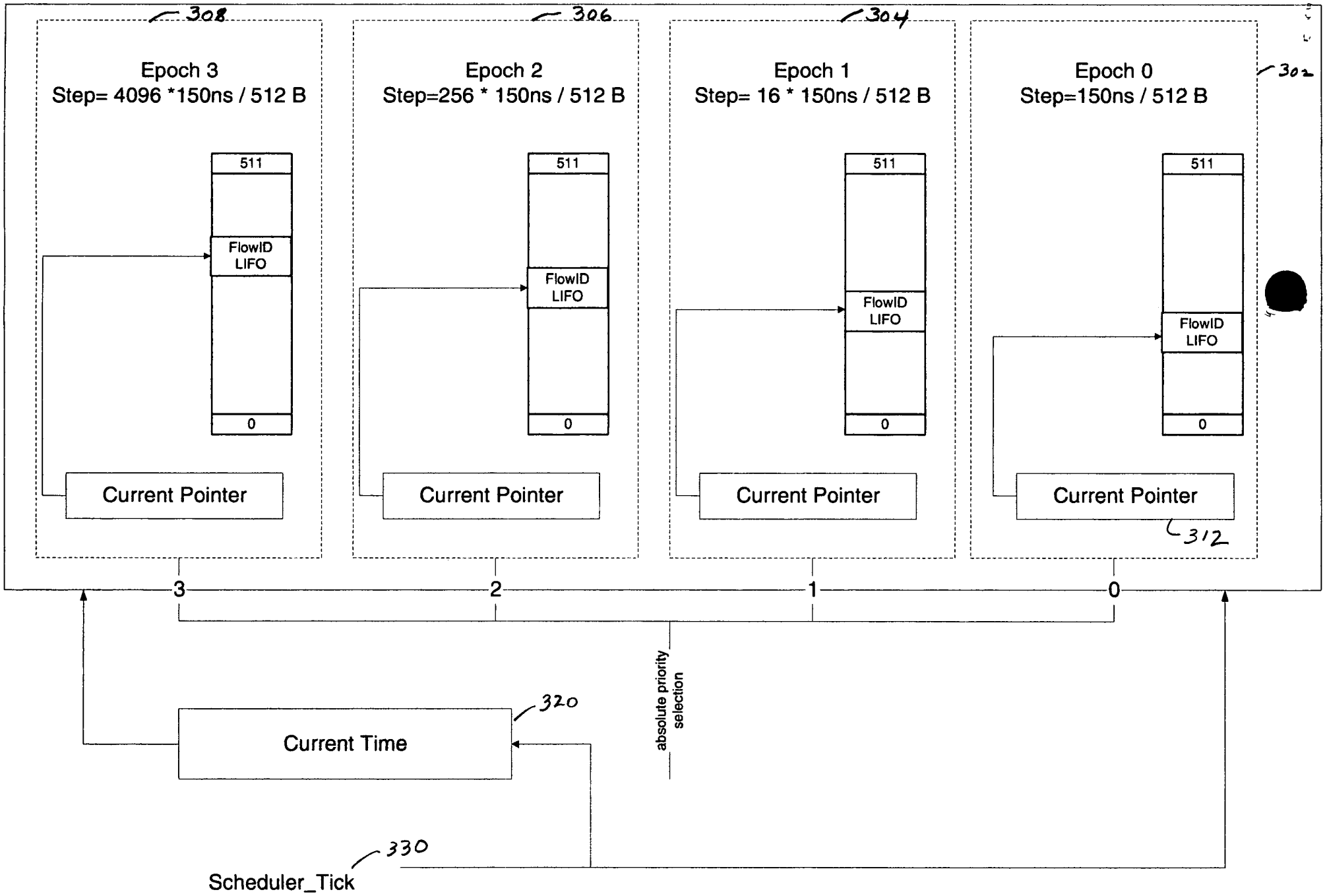

Fig. 4

Figure 2

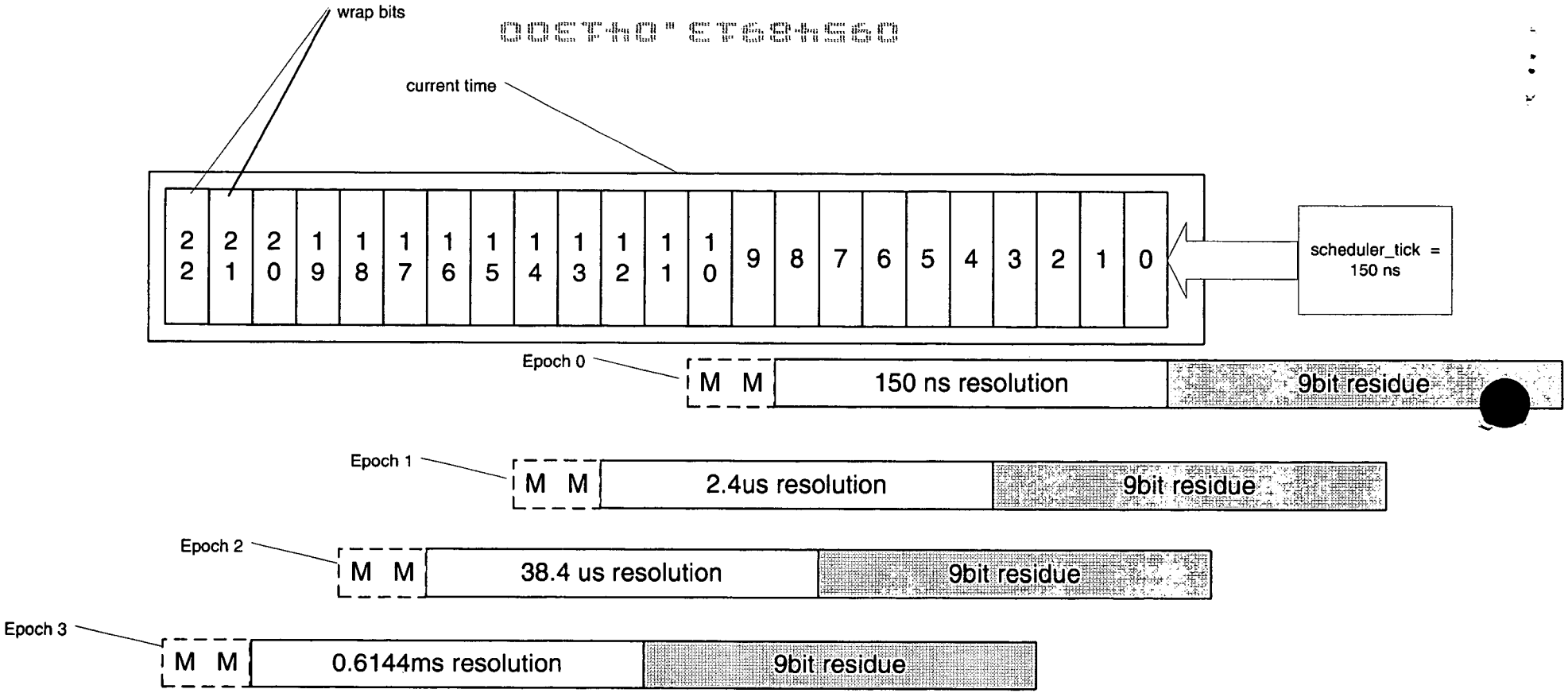
wrap bits
current time
22 21 20 19 18 17 16 15 14 13 12 11 10 9 8 7 6 5 4 3 2 1 0
scheduler_tick = 150 ns
Epoch 0
M M
150 ns resolution
9bit residue
Epoch 1
M M
2.4us resolution
9bit residue
Epoch 2
M M
38.4 us resolution
9bit residue
Epoch 3
M M
0.6144ms resolution
9bit residue

Fig. 5

DOCKET: CISCO-1560

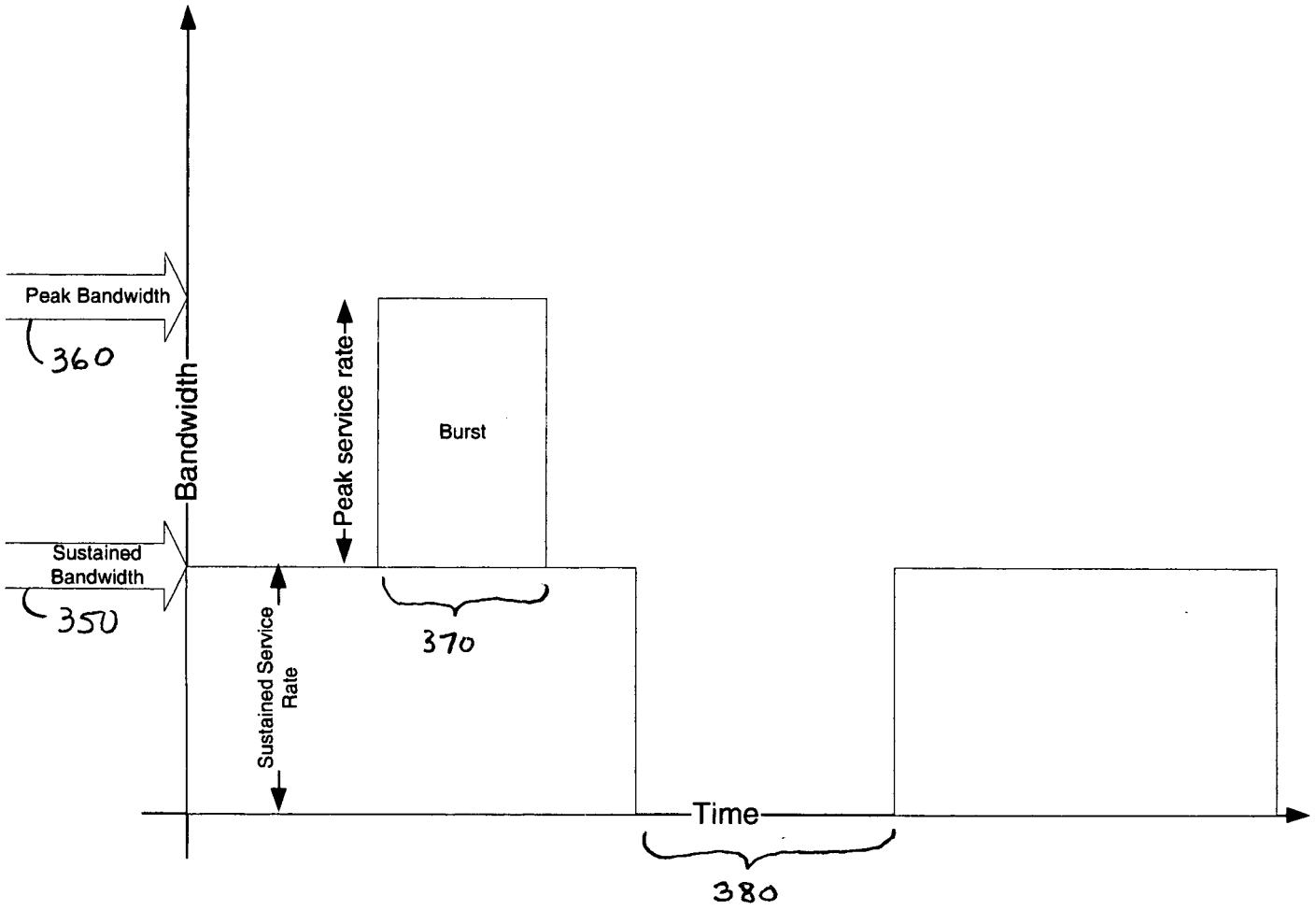

Fig. 6

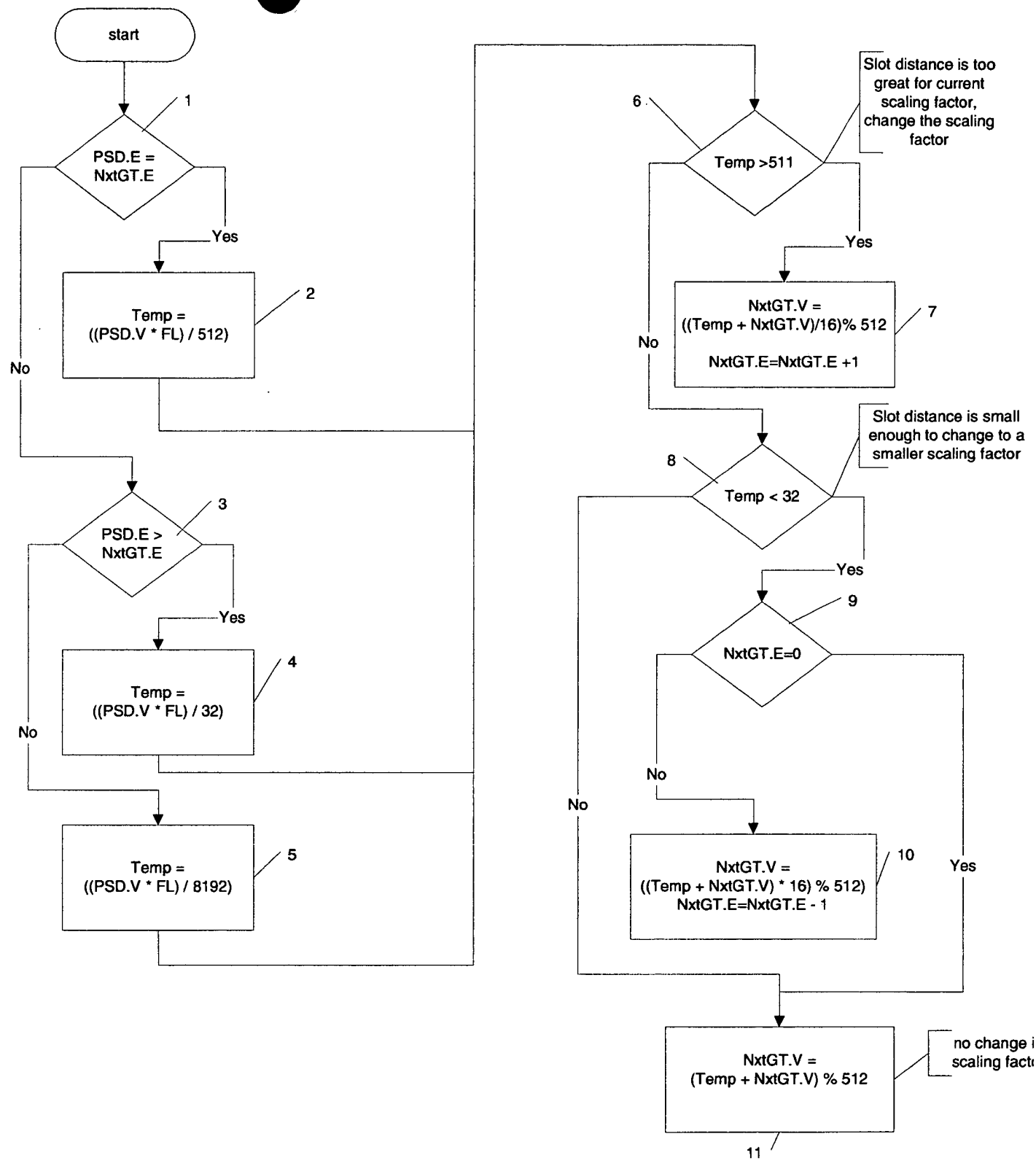
start
1
PSD.E = NxtGT.E
Yes
No
2
Temp = ((PSD.V * FL) / 512)
3
PSD.E > NxtGT.E
Yes
No
4
Temp = ((PSD.V * FL) / 32)
5
Temp = ((PSD.V * FL) / 8192)
6
Temp >511
Slot distance is too great for current scaling factor, change the scaling factor
Yes
No
7
NxtGT.V = ((Temp + NxtGT.V)/16)% 512
NxtGT.E=NxtGT.E +1
8
Temp < 32
Slot distance is small enough to change to a smaller scaling factor
Yes
No
9
NxtGT.E=0
No
Yes
10
NxtGT.V = ((Temp + NxtGT.V) * 16) % 512)
NxtGT.E=NxtGT.E - 1
11
NxtGT.V = (Temp + NxtGT.V) % 512
no change i
scaling fact

Fig. 7

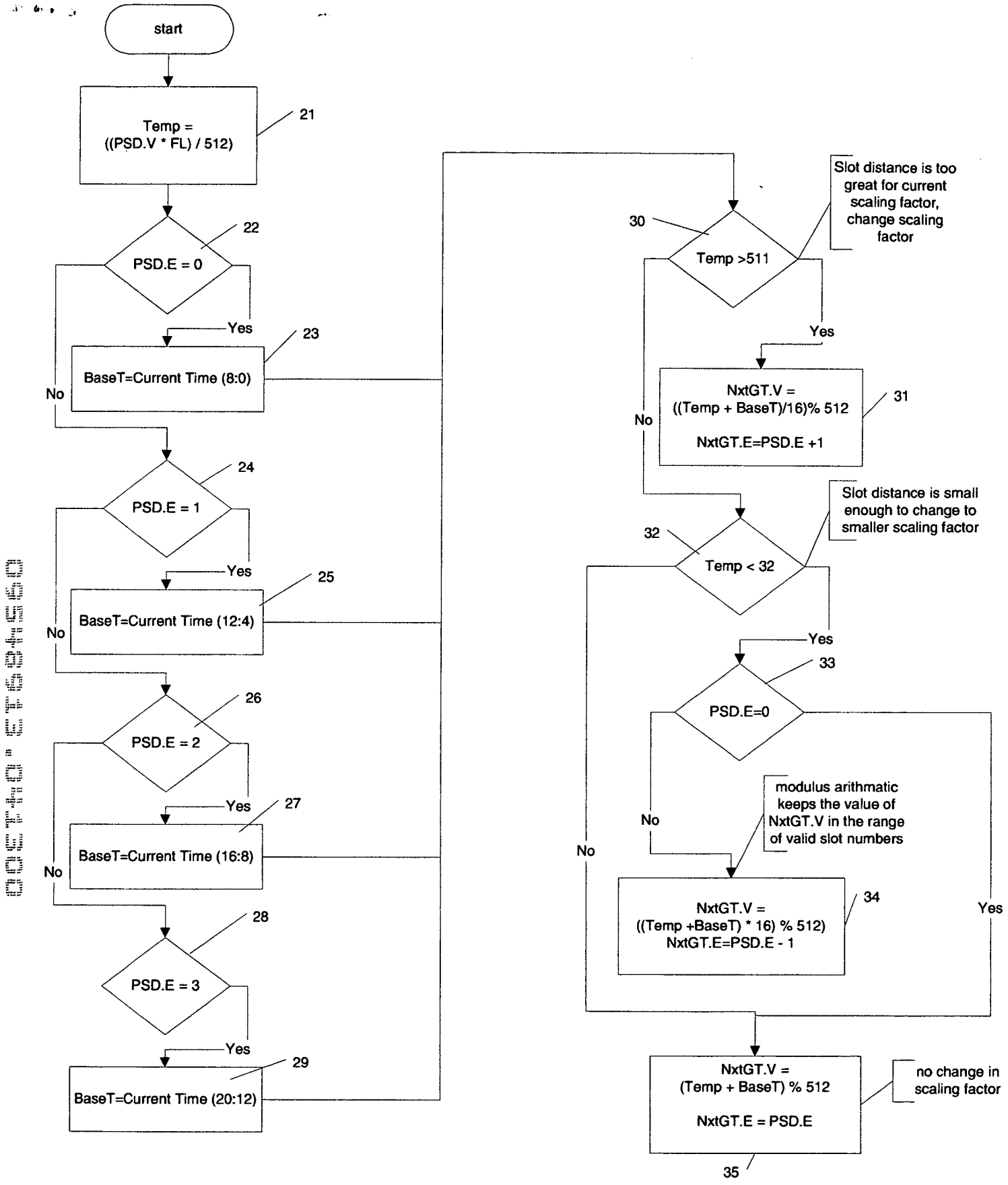
start
Temp = ((PSD.V * FL) / 512)
21
PSD.E = 0
22
Yes
No
BaseT=Current Time (8:0)
23
PSD.E = 1
24
Yes
No
BaseT=Current Time (12:4)
25
PSD.E = 2
26
Yes
No
BaseT=Current Time (16:8)
27
PSD.E = 3
28
Yes
BaseT=Current Time (20:12)
29
30
Temp >511
Slot distance is too great for current scaling factor, change scaling factor
Yes
No
NxtGT.V = ((Temp + BaseT)/16)% 512
NxtGT.E=PSD.E +1
31
32
Temp < 32
Slot distance is small enough to change to smaller scaling factor
Yes
No
33
PSD.E=0
Yes
No
modulus arithmatic keeps the value of NxtGT.V in the range of valid slot numbers
NxtGT.V = ((Temp +BaseT) * 16) % 512)
NxtGT.E=PSD.E - 1
34
NxtGT.V = (Temp + BaseT) % 512
NxtGT.E = PSD.E
no change in scaling factor
35

Fig. 8

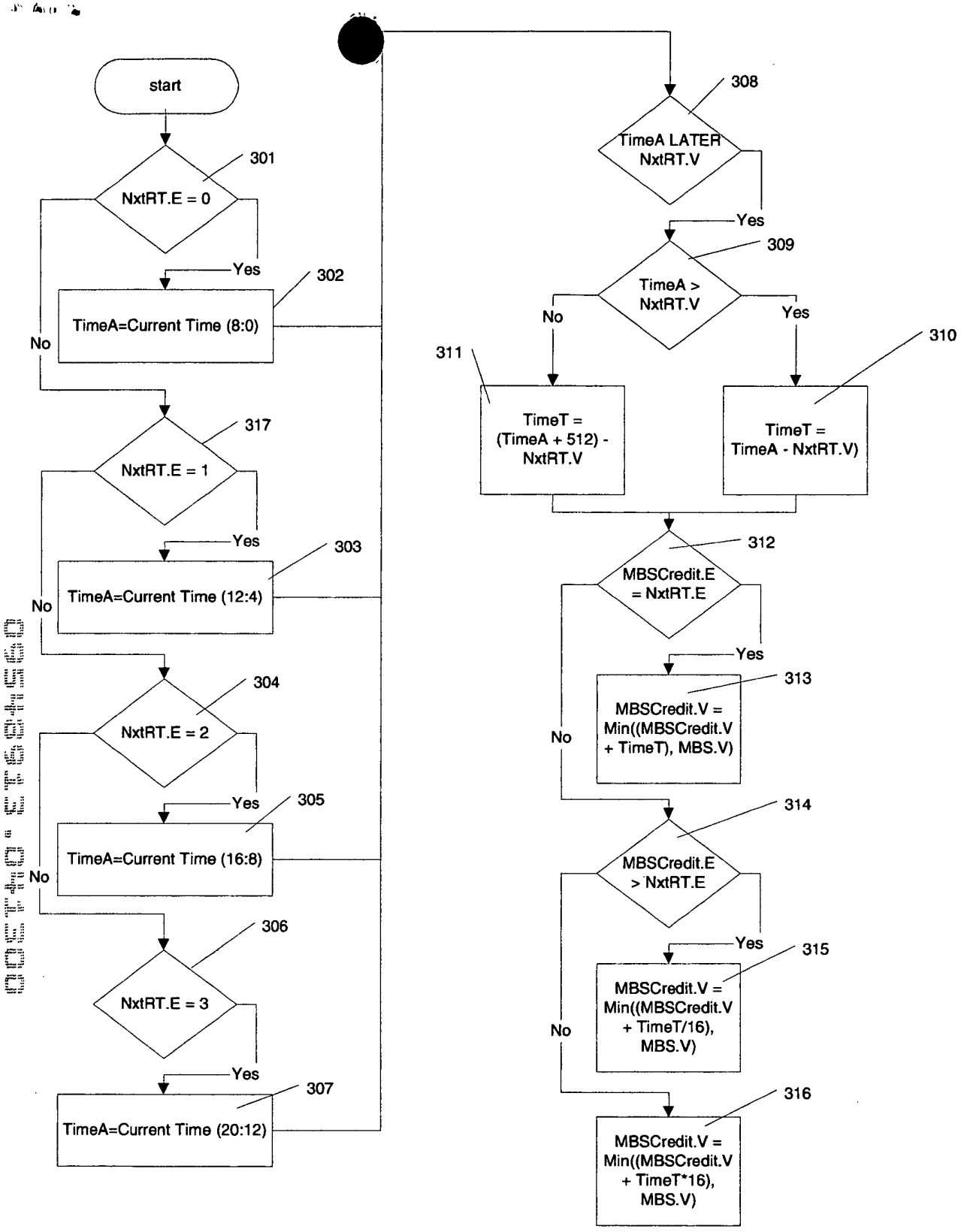
start
NxtRT.E = 0
301
Yes
No
TimeA=Current Time (8:0)
302
NxtRT.E = 1
317
Yes
No
TimeA=Current Time (12:4)
303
NxtRT.E = 2
304
Yes
No
TimeA=Current Time (16:8)
305
NxtRT.E = 3
306
Yes
TimeA=Current Time (20:12)
307
TimeA LATER NxtRT.V
308
Yes
TimeA > NxtRT.V
309
No
Yes
TimeT = (TimeA + 512) - NxtRT.V
311
TimeT = TimeA - NxtRT.V)
310
MBSCredit.E = NxtRT.E
312
Yes
No
MBSCredit.V = Min((MBSCredit.V + TimeT), MBS.V)
313
MBSCredit.E > NxtRT.E
314
Yes
No
MBSCredit.V = Min((MBSCredit.V + TimeT/16), MBS.V)
315
MBSCredit.V = Min((MBSCredit.V + TimeT*16), MBS.V)
316

Fig. 9

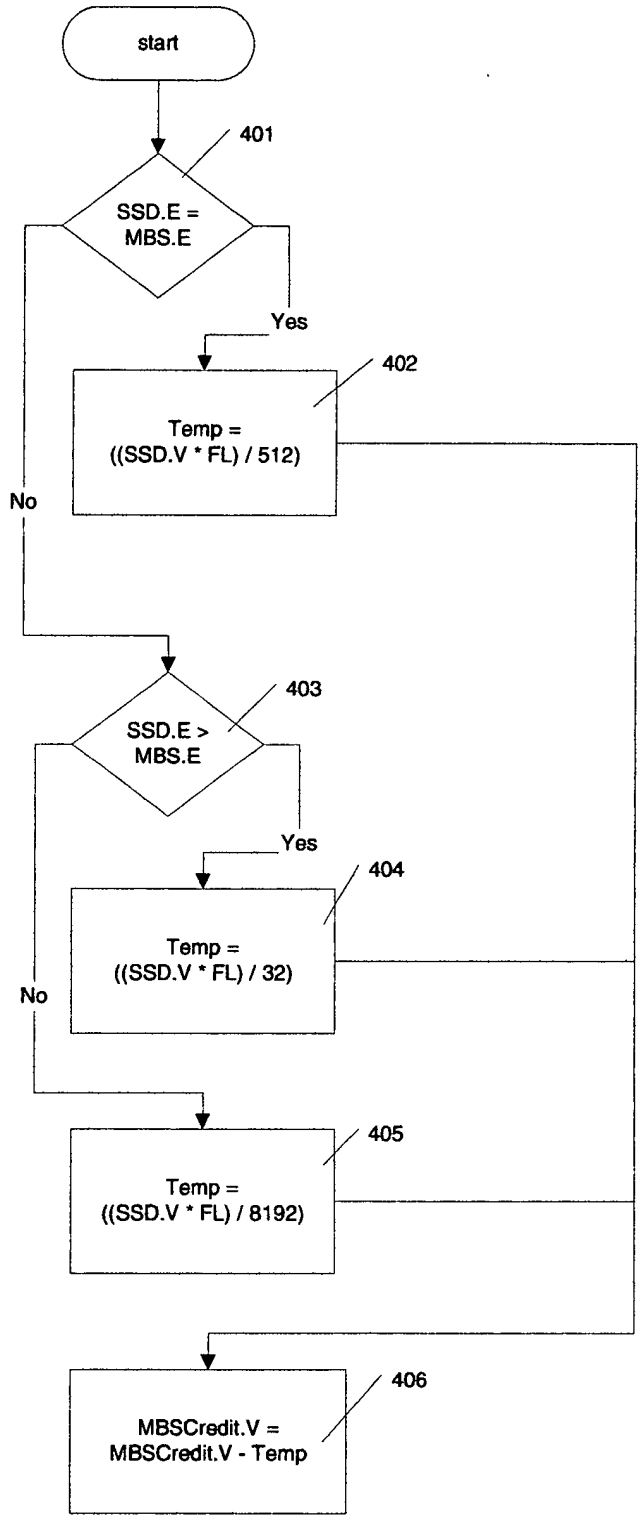
start
401
SSD.E = MBS.E
Yes
402
Temp = ((SSD.V * FL) / 512)
No
403
SSD.E > MBS.E
Yes
404
Temp = ((SSD.V * FL) / 32)
No
405
Temp = ((SSD.V * FL) / 8192)
406
MBSCredit.V = MBSCredit.V - Temp

Fig. 10

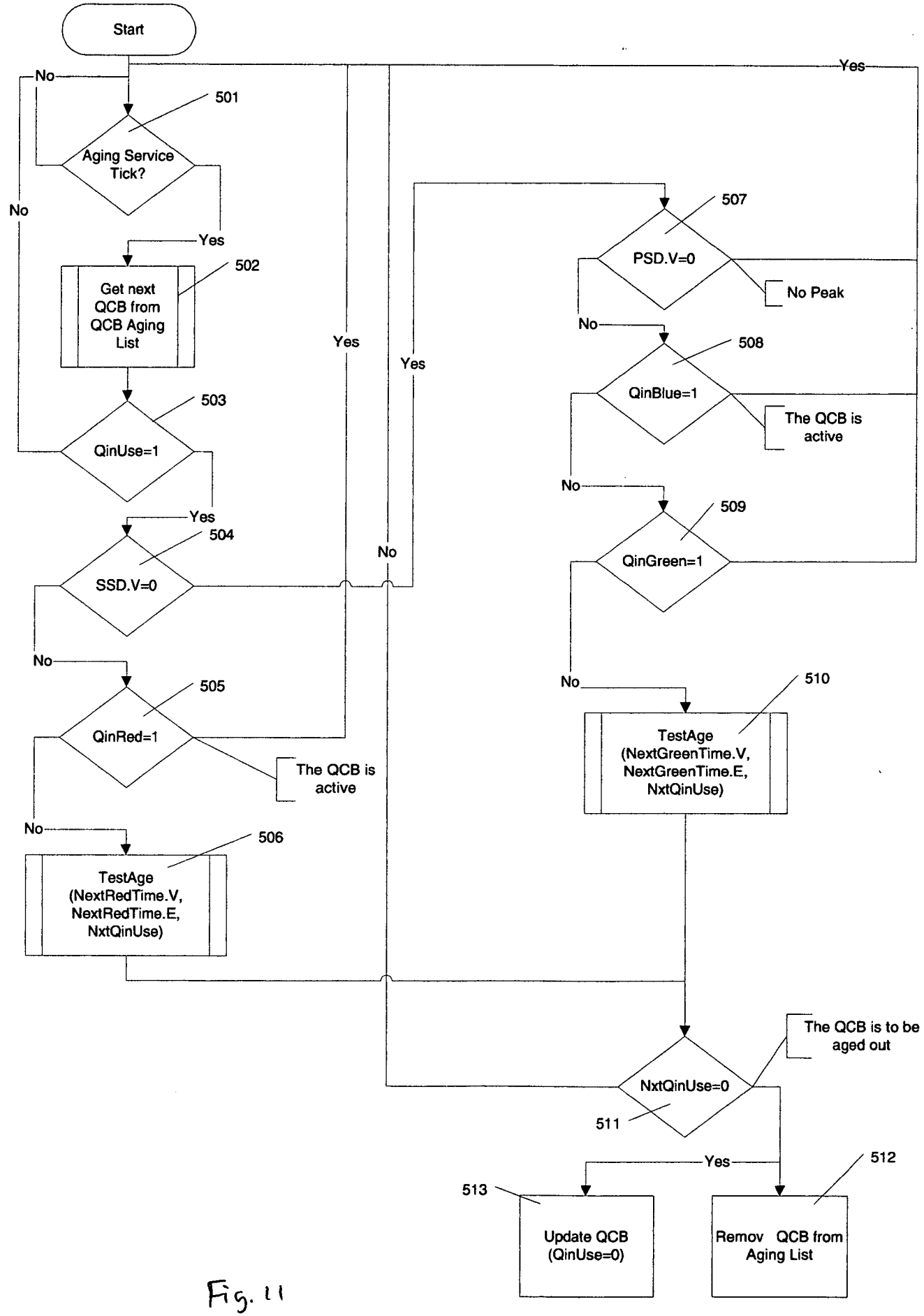
Start
Aging Service Tick?
501
No
Yes
Get next QCB from QCB Aging List
502
QinUse=1
503
Yes
No
SSD.V=0
504
Yes
No
QinRed=1
505
The QCB is active
No
TestAge (NextRedTime.V, NextRedTime.E, NxtQinUse)
506
PSD.V=0
507
No Peak
No
QinBlue=1
508
The QCB is active
No
QinGreen=1
509
No
TestAge (NextGreenTime.V, NextGreenTime.E, NxtQinUse)
510
NxtQinUse=0
511
The QCB is to be aged out
Yes
Update QCB (QinUse=0)
513
Remov QCB from Aging List
512

Fig. 11

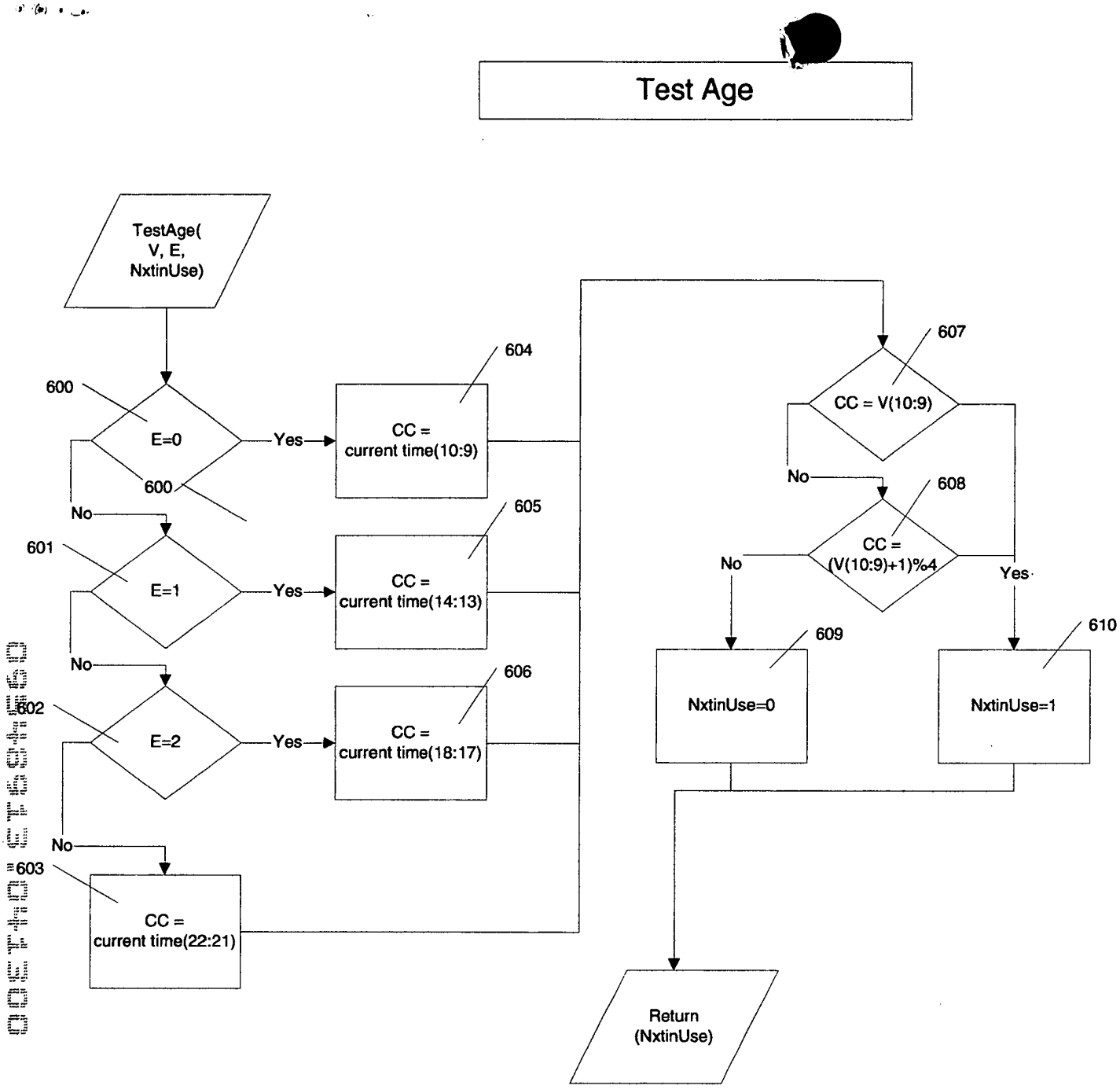
Test Age
TestAge(V, E, NxtinUse)
600
E=0
Yes
600
No
601
E=1
Yes
No
602
E=2
Yes
No
603
CC = current time(22:21)
604
CC = current time(10:9)
605
CC = current time(14:13)
606
CC = current time(18:17)
607
CC = V(10:9)
No
608
CC = (V(10:9)+1)%4
No
Yes
609
NxtinUse=0
610
NxtinUse=1
Return (NxtinUse)

Fig. 12